



PATENT  
Docket No.: 19603/3810 (CRF D-2693-01)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Paul H. Steen )

Serial No. : 10/072,404 )

Cnfrm. No. : 4794 )

Filed : February 8, 2002 )

For : A SYSTEM AND METHOD FOR  
CONTINUOUS CASTING OF A MOLTEN  
MATERIAL )

Examiner:  
Len Tran

Art Unit:  
1725

APPLICATION FOR PATENT TERM ADJUSTMENT  
PURSUANT TO 37 CFR § 1.705(b)

Mail Stop Issue Fee  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 CFR § 1.705(b), Applicant hereby requests reconsideration of the determination of patent term adjustment for the above-identified application. A Notice of Allowance and Fee(s) Due and a Determination of Patent Term Adjustment under 35 USC § 154(b) were mailed on February 17, 2006, by the U.S. Patent and Trademark Office ("PTO") (copy attached as Exhibit A). The Determination of Patent Term Adjustment indicates a period of patent term adjustment of 0 days. As set forth in greater detail below, Applicant calculates the correct patent term adjustment to be 122 days.

The PAIR record for the above-identified application, which is attached as Exhibit B, indicates a Restriction Requirement was mailed by the PTO on March 18, 2003. This PAIR record also incorrectly indicates a Response to Election/Restriction was received by the PTO on December 1, 2003. Instead, as shown by the return receipt postcard attached as Exhibit C, the Response to Election/Restriction was received by the PTO on April 23, 2003, which is within the three month period as set forth in 37 CFR § 1.704(b). Accordingly,

the Applicant adjustment for the Response to Election/Restriction should be 0 days, not 166 days as set forth in the PAIR record.

Additionally, after the PTO received the Response to Election/Restriction on April 23, 2003, the PTO did not Mail Non-Final Rejection until December 9, 2003, which is greater than the four months period set forth in 37 CFR § 1.703(a)(2). Accordingly, the PTO adjustment for the Mail Non-Final Rejection should be 108 days, not 0 days as set forth in the PAIR record.

Further, the PAIR record indicates a Response After Non-Final Action was received on April 13, 2004. However, the Response After Non-Final Action included a certificate of mailing dated April 9, 2004, in compliance with 37 CFR § 1.8(a) as shown in Exhibit D. Accordingly, the Applicant adjustment for the Response After Non-Final Action should be 31 days, not 35 days as set forth in the PAIR record.

As a result, the PTO adjustment should be 245 days, the Applicant adjustment should be 123 days, and the overall patent term adjustment for the above-identified application should be 122 days.

Pursuant to 37 CFR § 1.705(b)(2)(iii), Applicant asserts the above-identified patent application is not subject to a terminal disclaimer. Applicant also asserts that no circumstances exist that constitute a failure to engage in reasonable efforts to conclude prosecution pursuant to 37 CFR § 1.705(b)(2)(iv)(B).

In compliance with 37 CFR § 1.705(b)(1), enclosed is a check to cover the \$200.00 petition fee pursuant to 37 CFR § 1.18(e). Please charge any additional necessary fees or credit any overpayment to Deposit Account No. 14-1138.

Respectfully submitted,

Dated: May 17, 2006

By: Gunnar G. Leinberg  
Gunnar G. Leinberg  
Registration No. 35,584

NIXON PEABODY LLP  
Clinton Square, P.O. Box 31051  
Rochester, New York 14603-1051  
Telephone: (585) 263-1128  
Facsimile: (585) 263-1600

CERTIFICATE OF MAILING OR  
TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being  
deposited with the United States Postal Service on  
May 17, 2006 with sufficient postage as first  
class mail in an envelope addressed to: Mail Stop  
Issue Fee, Commissioner for Patents, P. O. Box 1450,  
Alexandria, VA 22313-1450

Patricia Knisley  
Signature

Patricia Knisley  
Type or Print Name



**Notice of Allowability**

**Application No.**

10/072,404

**Examiner**

Len Tran

**Applicant(s)**

STEEN, PAUL H.

**Art Unit**

1725

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/1/05.
2. ☒ The allowed claim(s) is/are 1-12, 24-32, 42-51.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)           |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|   | 9. <input type="checkbox"/> Other _____   |

Art Unit: 1725



## DETAILED ACTION

*Claims 1-12, 24-32, and 42-51 are allowed.*

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

*Claims 13-23 and 33-41 have been canceled.* These non-elected claims were treated as election without traverse, mailed on December 09, 2003. However, these claims may be fired as a divisional application.

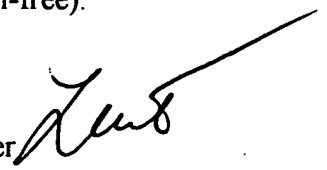
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1725

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran  
Primary Examiner  
Art Unit 1725

A handwritten signature in black ink, appearing to read 'Len Tran', is written over the printed name and title of the Primary Examiner.

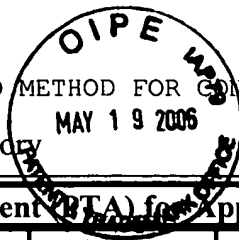
February 14, 2006

Printer Friendly

10/072,404

SYSTEM AND METHOD FOR CONTINUOUS CASTING OF A MOLTEN MATERIAL

Patent Term Adjustment History



Patent Term Adjustment (PTA) for Application Number: 10/072,404			
			Days
Filing or 371(c) Date:	02-08-2002	USPTO Delay (PTO):	137
Issue Date of Patent:	-	Three Years:	-
Pre-Issue Petitions (days):	+0	Applicant Delay (APPL):	293
Post-Issue Petitions (days):	+0	Total PTA:	0
USPTO Adjustment(days):	+0	Explanation Of Calculations	
Patent Term Adjustment History			
Date	Contents Description	PTO(Days)	APPL (Days)
02-17-2006	Mail Notice of Allowance		
02-17-2006	Mail Examiner's Amendment		
02-14-2006	Notice of Allowance Data Verification Completed		
02-14-2006	Examiner's Amendment Communication		
12-07-2005	Date Forwarded to Examiner		
12-01-2005	Response after Non-Final Action		
09-14-2005	IFW TSS Processing by Tech Center Complete		
09-07-2005	Mail Non-Final Rejection		
09-06-2005	Non-Final Rejection		
07-06-2005	Date Forwarded to Examiner		
07-06-2005	Date Forwarded to Examiner		
07-06-2005	DISPOSAL FOR A RCE/CPA/129 (express abandonment if CPA)		
06-28-2005	Request for Continued Examination (RCE)	↑	92
06-28-2005	Request for Extension of Time - Granted	↑	↑
06-28-2005	Workflow - Request for RCE - Begin	↑	↑
12-28-2004	Mail Final Rejection (PTOL - 326)	137	
12-23-2004	Final Rejection	↑	
10-18-2004	Date Forwarded to Examiner	↑	
04-13-2004	Response after Non-Final Action	↑	35
04-13-2004	Request for Extension of Time - Granted	↑	↑
04-13-2004	Workflow incoming amendment IFW	↑	↑
12-09-2003	Mail Non-Final Rejection	↑	↑
12-05-2003	Non-Final Rejection	↑	
12-01-2003	Date Forwarded to Examiner	↑	
12-01-2003	Response to Election / Restriction Filed	↑	166
03-18-2003	Mail Restriction Requirement	↑	↑
03-17-2003	Requirement for Restriction / Election	↑	
03-11-2003	Reference capture on IDS	↑	
03-11-2003	Information Disclosure Statement (IDS) Filed	↑	↑
10-25-2002	Case Docketed to Examiner in GAU	↑	
05-30-2002	Case Docketed to Examiner in GAU	↑	
		↑	

05-15-2002	Application Dispatched from OIPE		
05-06-2002	Application Is Now Complete	↑	
04-05-2002	Additional Application Filing Fees	↑	
04-05-2002	Applicant has submitted new drawings to correct Corrected Papers problems	↑	
03-07-2002	Corrected Paper	↑	
02-25-2002	IFW Scan & PACR Auto Security Review	↑	
02-08-2002	Reference capture on IDS	↑	
02-08-2002	Information Disclosure Statement (IDS) Filed	↑	
02-08-2002	Initial Exam Team nn	↑	

[Close Window](#)





**UTILITY/DESIGN PATENT**

(amend/final amend)

Date: April 17, 2003  
Date of O.A.: \_\_\_\_\_

Rec'd in the U.S. Patent & Trademark Office on the date stamped hereon

via Certificate of Mail:

Case # 19603/3810 S/N: 10/072,441 Filed: February 8, 2002

Pat. # \_\_\_\_\_ Issued: \_\_\_\_\_ Art Unit: 1725

Examiner: Len Tran Atty: GGL

Batch: \_\_\_\_\_

Applicant: Paul H. Steen

Title: A System and method for Continuous Casting of a molten metal

Re-Exam Control # \_\_\_\_\_ Quality Control: OIP

VERIFIED BY: Asst: Sam

- |   |  |
|---|--|
| <input type="checkbox"/> Transmittal Sheet in duplicate   | <input checked="" type="checkbox"/> Amendment in <u>1</u> pgs. |
| <input type="checkbox"/> _____ Mo. Ext. Time in dupe.   | <input type="checkbox"/> Change of Address                     |
| <input type="checkbox"/> Request for Drawing Changes  | <input type="checkbox"/> Small Entity Statement                |
| <input type="checkbox"/> _____ pgs. Drawings  | <input type="checkbox"/> Assignment in _____ pgs.              |
| <input type="checkbox"/> \$ _____ Check for Amend.  | <input type="checkbox"/> \$ _____ Check for Assig.             |
| <input type="checkbox"/> Issue Per Trans. in duplicate  | <input type="checkbox"/> \$ _____ Issue Per/Soft Copies        |
| <input checked="" type="checkbox"/> Information Disclosure Statement; PTO-1449 in duplicate with _____ Reference(s) |  |
| <input type="checkbox"/> _____  |  |

RECEIVED

APR 28 2003

Nixon Peabody LLP

ENTERED  
Nixon Peabody LLP

MAY 05 2003

FILE 19603/3810  
OKT NS



# TRANSMITTAL FORM

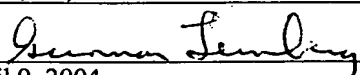
(to be used for all correspondence after initial filing)

<b>Application Number</b>	10/072,404		
	<b>Filing Date</b>	February 8, 2002	
	<b>First Named Inventor</b>	Paul H. Steen	
	<b>Group Art Unit</b>	1725	
	<b>Examiner Name</b>	Len Tran	
<b>Total Number of Pages in This Submission</b>		<b>Attorney Docket Number</b>	19603/3810 (CRF D-2693)

## ENCLOSURES (check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request (one-month) <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> A copy of the Notice to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Declaration and Power of Attorney <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Application Data Sheet <input type="checkbox"/> Request for Corrected Filing Receipt with Enclosures <input checked="" type="checkbox"/> A self-addressed, prepaid postcard for acknowledging receipt <input type="checkbox"/> Other Enclosure(s) (please identify below):
<b>Remarks</b>		<input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees required or credit any overpayments to Deposit Account No. 14-1138 for the above identified docket number.

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

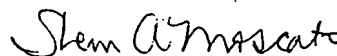
<b>Firm or Individual name</b>	Gunnar G. Leinberg, Esq. Nixon Peabody LLP Clinton Square, P.O. Box 31051 Rochester, New York 14603-1051 Telephone: (585) 263-1014 Fax: (585) 263-1600
<b>Signature</b>	 Registration No. 35,584
<b>Date</b>	April 9, 2004

## CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

- ☒ deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop \_\_\_\_\_, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450
- ☐ transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (703) \_\_\_\_\_

April 9, 2004  
Date

  
Signature  
Sherri A. Moscato  
Typed or printed name

# FEE TRANSMITTAL

FOR FY 2003

Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT

(\$ 55)

Application Number

10/072,404

Filing Date

February 8, 2002

First Named Inventor

Paul H. Steen

Examiner Name

Len Tran

Art Unit

1725

Attorney Docket No.

19603/3810 (CRF D-2693)

## METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number

14-1138

Deposit Account Name

Nixon Peabody LLP

The Commissioner is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) (\$ 0)

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
31	-37** = 0	X 9	= 0
Independent Claims	2	-4** = 0	X 43 = 0
Multiple Dependent	0	X 145	= 0

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0)

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description
1051	130	2051	65	Surcharge - late filing fee or oath
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet
1053	130	1053	130	Non-English specification
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action
1251	110	2251	55	Extension for reply within first month
1252	420	2252	210	Extension for reply within second month
1253	950	2253	475	Extension for reply within third month
1254	1,480	2254	740	Extension for reply within fourth month
1255	2,010	2255	1,005	Extension for reply within fifth month
1401	330	2401	165	Notice of Appeal
1402	330	2402	165	Filing a brief in support of an appeal
1403	290	2403	145	Request for oral hearing
1451	1,510	1451	1,510	Petition to institute a public use proceeding
1452	110	2452	55	Petition to revive - unavoidable
1453	1,330	2453	665	Petition to revive - unintentional
1501	1,330	2501	665	Utility issue fee (or reissue)
1502	480	2502	240	Design issue fee
1503	640	2503	320	Plant issue fee
1460	130	1460	130	Petitions to the Commissioner
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)
1806	180	1806	180	Submission of Information Disclosure Stmt
8021	40	8021	40	Recording each patent assignment per property (times number of properties)
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))
1801	770	2801	385	Request for Continued Examination (RCE)
1802	900	1802	900	Request for expedited examination of a design application

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 55)

## CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

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☐ transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (703) \_\_\_\_\_

April 9, 2004  
Date

Signature  
Sherri A. Moscato  
Typed or printed name

## SUBMITTED BY

Name (Print/Type)

Gunnar G. Leinberg

Registration No.  
(Attorney/Agent)

35,584

Signature

Gunnar Leinberg

## Complete (if applicable)

Telephone

(585) 263-1014

Date

April 9, 2004

SEND TO: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450



## PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional)  
19603/3810 (CRF D-2693)

## CERTIFICATE OF MAILING

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Signature: Sherri A. MoscatoName: Sherri A. Moscato

In re Application of Paul H. Steen

Application Number 10/072,404Filed 2/8/2002

For A SYSTEM AND METHOD FOR CONTINUOUS CASTING OF A MOLTEN MATERIAL

Group Art Unit 1725

Examiner Len Tran

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate entity fee are as follows  
(check time period desired):

- ☒ One month (37 CFR 1.17(a)(1)) - (\$55/\$110) \$ 55.00
- ☐ Two months (37 CFR 1.17(a)(2)) - (\$210/\$420) \$ \_\_\_\_\_
- ☐ Three months (37 CFR 1.17(a)(3)) - (\$475/\$950) \$ \_\_\_\_\_
- ☐ Four months (37 CFR 1.17(a)(4)) - (\$740/\$1480) \$ \_\_\_\_\_
- ☐ Five months (37 CFR 1.17(a)(5)) - (\$1005/\$2010) \$ \_\_\_\_\_

- ☒ Applicant claims small entity status.
- ☐ A check to cover the fee is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Commissioner has already been authorized to charge fees in this application to a Deposit Account.
- ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account Number 14-1138.  
I have enclosed a duplicate copy of this sheet.

I am the ☐ applicant/inventor

☐ assignee of record of the entire interest. See 37 CFR 3.71.  
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ attorney or agent of record.

☐ attorney or agent under 37 CFR 1.34(a).  
Registration number if acting under 37 CFR 1.34(a) \_\_\_\_\_

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

April 9, 2004  
Date

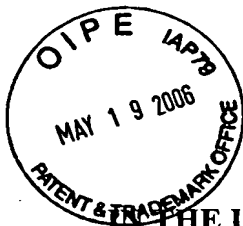
Gunnar G. Leinberg  
Signature

Gunnar G. Leinberg  
Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of \_\_\_\_\_ forms are submitted.

SEND TO: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450



PATENT  
Docket No.: 19603/3810 (CRF D-2693)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants	:	Paul H. Steen	)	Examiner:
			)	Len Tran
Serial No.	:	10/072,404	)	
			)	Art Unit:
Cnfrm. No.	:	4794	)	1725
			)	
Filed	:	February 8, 2002	)	
			)	
For	:	A SYSTEM AND METHOD FOR	)	
		CONTINUOUS CASTING OF A MOLTEN	)	
		MATERIAL	)	

**AMENDMENT**

**Mail Stop** \_\_\_\_\_  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the December 9, 2003, office action, please amend the above-identified patent application as follows:

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks** begin on page 8 of this paper.

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A system for controlling and manipulating solidification of a molten material, the system comprising:
  - a substrate on which the molten material is deposited; and
  - a writing system that imposes a gradient pattern comprising multiple elements on at least a portion of at least one of the substrate on which the molten material is deposited and the molten material.
2. (Original) The system as set forth in claim 1 further comprising an erasing system positioned to substantially erase the gradient pattern imposed on the substrate.
3. (Original) The system as set forth in claim 1 where in the gradient pattern is a thermal gradient pattern.
4. (Currently Amended) The system as set forth in claim 1 ~~where in~~ wherein the gradient pattern is a compositional gradient pattern.
5. (Original) The system as set forth in claim 1 wherein the writing system comprises a laser that generates a light signal used to impose a gradient pattern on the substrate.
6. (Original) The system as set forth in claim 5 wherein the writing system further comprises a prism which reflects the light signal from the laser on to the substrate.
7. (Original) The system as set forth in claim 1 further comprising a drive system connected to the substrate.
8. (Original) The system as set forth in claim 7 wherein the substrate is a wheel.

9. (Original) The system as set forth in claim 7 wherein the substrate is a belt.

10. (Original) The system as set forth in claim 7 wherein the substrate is a product that is being coated with the molten material.

11. (Original) The system as set forth in claim 1 further comprising a source for the molten material that deposits the molten material on at least a portion of the gradient pattern formed on the substrate.

12. (Original) The system as set forth in claim 11 wherein the source for the molten material comprises:

- a container for the molten material;

- a nozzle having a passage connected to the container and positioned adjacent to and spaced from the substrate to deposit the molten material on at least a portion of the gradient pattern formed on the substrate; and

- a pressure system that applies pressure to the molten material being dispensed from the nozzle on to the substrate.

13. (Withdrawn) A method for controlling and manipulating solidification of a molten material, the method comprising:

- generating a gradient pattern on at least a portion of a substrate; and

- depositing the molten material on at least a portion of the substrate with the gradient pattern.

14. (Withdrawn) The method as set forth in claim 13 further comprising substantially erasing the gradient pattern imposed on the substrate after the depositing.

15. (Withdrawn) The method as set forth in claim 13 where in the gradient pattern is a thermal gradient pattern.

16. (Withdrawn) The system as set forth in claim 13 where in the gradient pattern is a compositional gradient pattern.

17. (Withdrawn) The method as set forth in claim 13 wherein the generating comprises directing a light signal from a laser on the substrate to impose the gradient pattern.

18. (Withdrawn) The method as set forth in claim 17 wherein the generating further comprises reflecting the laser light signal on to the substrate.

19. (Withdrawn) The method as set forth in claim 13 further comprising rotating the substrate.

20. (Withdrawn) The method as set forth in claim 19 wherein the substrate is a wheel.

21. (Withdrawn) The method as set forth in claim 19 wherein the substrate is a belt.

22. (Withdrawn) The method as set forth in claim 19 wherein the substrate is a product that is being coated with the molten material.

23. (Withdrawn) The method according to claim 13 wherein the depositing further comprises applying pressure to the molten material being dispensed.

24. (Currently Amended) A system for continuous casting of a molten material, the system comprising:

- a source for the molten material;
- a substrate on which the molten material is deposited;
- a driving system that rotates the substrate; and
- a writing system that imposes a gradient pattern comprising multiple elements on at least a portion of at least one of the substrate on which the molten material is deposited by the source and the molten material.

25. (Original) The system as set forth in claim 24 further comprising an erasing system positioned to substantially erase the gradient pattern imposed on the substrate.



26. (Original) The system as set forth in claim 24 where in the gradient pattern is a thermal gradient pattern.

27. (Currently Amended) The system as set forth in claim 24 ~~where in~~ wherein the gradient pattern is a compositional gradient pattern.

28. (Original) The system as set forth in claim 24 wherein the writing system comprises a laser that generates a light signal used to impose the gradient pattern on the substrate.

29. (Original) The system as set forth in claim 24 wherein the writing system further comprises a prism which reflects the light signal from the laser on to the substrate.

30. (Original) The system as set forth in claim 24 wherein the substrate is a wheel.

31. (Original) The system as set forth in claim 24 wherein the substrate is a belt.

32. (Original) The system as set forth in claim 24 wherein the source for the molten material comprises:

a container for the molten material;

a nozzle having a passage connected to the container and positioned adjacent to and spaced from the substrate to deposit the molten material on at least a portion of the gradient pattern formed on the substrate; and

a pressure system that applies pressure to the molten material being dispensed from the nozzle on to the substrate.

33. (Withdrawn) A method for continuous casting of a molten material, the method comprising:

rotating a substrate;

generating a gradient pattern on at least a portion of the substrate; and

depositing the molten material on at least a portion of the substrate with the gradient pattern.

34. (Withdrawn) The method as set forth in claim 33 further comprising substantially erasing the gradient pattern imposed on the substrate after the depositing.

35. (Withdrawn) The system as set forth in claim 33 where in the gradient pattern is a thermal gradient pattern.

36. (Withdrawn) The system as set forth in claim 33 where in the gradient pattern is a compositional gradient pattern.

37. (Withdrawn) The method as set forth in claim 33 wherein the generating comprises directing a light signal from a laser on the substrate to impose the gradient pattern.

38. (Withdrawn) The method as set forth in claim 37 wherein the generating further comprises reflecting the laser light signal on to the substrate.

39. (Withdrawn) The method as set forth in claim 33 wherein the substrate is a wheel.

40. (Withdrawn) The method as set forth in claim 33 wherein the substrate is a belt.

41. (Withdrawn) The method according to claim 33 wherein the depositing further comprises applying pressure to the molten material being dispensed.

42. (New) The system as set forth in claim 1 further comprising a control system coupled to the writing system that controls the gradient pattern imposed by the writing system on the substrate.

43. (New) The system as set forth in claim 42 further comprising a sensor positioned to provide information about the effect of the gradient pattern on a resulting

product from the deposited molten material and coupled to the control system, the control system controls the gradient pattern imposed by the writing system in response to the provided information.

44. (New) The system as set forth in claim 4 wherein the compositional gradient pattern comprises at least one material deposited on the substrate.

45. (New) The system as set forth in claim 1 wherein the writing system imposes the gradient pattern on the substrate.

46. (New) The system as set forth in claim 1 wherein the writing system imposes the gradient pattern on the molten material.

47. (New) The system as set forth in claim 24 further comprising a control system coupled to the writing system that controls the gradient pattern imposed by the writing system on the substrate.

48. (New) The system as set forth in claim 47 further comprising a sensor positioned to provide information about the effect of the gradient pattern on a resulting product from the deposited molten material and coupled to the control system, the control system controls the gradient pattern imposed by the writing system in response to the provided information.

49. (New) The system as set forth in claim 27 wherein the compositional gradient pattern comprises at least one material deposited on the substrate.

50. (New) The system as set forth in claim 24 wherein the writing system imposes the gradient pattern on the substrate.

51. (New) The system as set forth in claim 24 wherein the writing system imposes the gradient pattern on the molten material.

**REMARKS**

Applicant has amended claims 1, 4, 24, and 27 and has added new claims 42-51. In view of the above amendments and the following remarks, Applicant hereby requests further examination and reconsideration of the application, and allowance of claims 1-12, 24-32, and 42-51.

The Office has rejected claims 1-5, 7, 8, 10-12, 24-28, 30, and 32 under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,600,048 to Sato et al. ("Sato") and has rejected claims 6, 9, 29, and 31 under 35 U.S.C. 103(a) as being unpatentable over Sato. The Office asserts that Sato discloses a system for controlling solidification of the molten metal with a substrate (1), a writing system (9), and an erasing system (17). The Office asserts that the writing system is for imposing a thermal gradient on the substrate and that the writing system is a laser, a drive system (2), a container for molten metal, a nozzle connected to the container, and a pressure system to apply pressure dispense on the nozzle onto the substrate (figure 1). Additionally, the Office asserts that Sato fails to teach casting with a belt and a prism to reflect light, but asserts that Sato discloses that strip casting can be used in either a roller or a belt and discloses using a laser with a condenser lens.

Sato does not disclose or suggest, "a writing system that imposes a gradient pattern comprising multiple elements on at least a portion of at least one of the substrate on which the molten material is deposited and the molten material" as recited in claims 1 and 24. The Office's attention is respectfully directed to col. 3, lines 18-21 in Sato which discloses, "Similarly to these prior arts, the present invention is also directed to a method for casting a molten metal on a chill body while heating the chill body to keep its temperature within the proper range" (See also col. 6, lines 26-31 in Sato). As described at col. 3, line 45-48 in Sato, the high density energy source is used to heat the surface layer of the chill body. Further, as illustrated in FIGS. 3 and 4 and discussed at col. 4, lines 26-36 and col. 5, lines 21-66, the methods disclose that the many reflections smear or spread the laser beam to heat the chill body, not to form any type of gradient pattern. Accordingly, the only teaching in Sato is for a heating system for providing a general heating of a surface of the chill body using a high density energy source, i.e. a laser. Nowhere does Sato teach or suggest a writing system that imposes any type of gradient pattern on the substrate, let alone a gradient pattern comprising multiple elements on the substrate or molten material.

The present invention provides a process and system for high-speed (throughput) casting of a flat product of high quality which is achieved through the use of gradient patterns comprising multiple elements. As described in paragraph 38 in the above-identified patent application, the gradient pattern affects the solidification of the molten material and thus the resulting end product. By using a gradient pattern on the substrate, a high quality ribbon product can be produced. Some examples of thermal gradient patterns which could be imposed on substrate 12 are illustrated in FIGS. 5A-5D in the above-identified patent application.

Accordingly, in view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1 and 24. Since claims 2-12 depend from and contain the limitations of claim 1 and claims 25-32 depend from and contain the limitations of claim 24, they are distinguishable over the cited reference and patentable in the same manner as claims 1 and 24.

Sato also does not disclose or suggest, "wherein the gradient pattern is a compositional gradient pattern" as recited in claims 4 and 27. The Office's attention is respectfully directed to FIGS. 1, 3, and 4 and col. 4, line 67 to col. 5, line 2 and col. 5 lines 23-25 and 50-53, which illustrate and disclose that a laser beam radiation apparatus is used to heat the chill body. Nowhere does Sato teach or suggest a writing system that imposes any type of compositional gradient pattern on the chill body.

As disclosed in paragraph 27 in the above-identified patent application, "the nozzle 21 under the control of the compositional distribution system 23 and distributes dots or other portions of material on a portion of the substrate, for example portions of liquid that dry quickly to form a solid film." As disclosed in paragraph 28 in the above-identified patent application, the compositional gradient pattern is a film deposited on the substrate which has been etched by laser ablation. Like the thermal gradient pattern, with the compositional gradient pattern, the present invention is able to control and produce a high quality ribbon product. Accordingly, in view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 4 and 27.

Applicant has also added new dependent claims 42-51 which are believed to be distinguishable over the cited references and in condition for allowance. A notice to this effect is respectfully requested.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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